

In the Claims

This listing of claims will replace all prior versions, and listings, of claims.

Listing of Claims

1. – 14. Canceled.

15. (Original) A renewing method for a glass molding die, comprising:

providing a used glass molding die comprising a substrate, a first noble metal layer overlying the substrate, a second noble metal layer overlying the first noble layer metal, a carbon-containing third noble metal layer overlying the second noble metal layer, and a DLC passivation film overlying the third noble metal layer;

removing the passivation film and third noble metal layer using oxygen plasma;

grinding and polishing the molding die to completely remove the third noble metal layer;

cleaning the polished molding die;

forming a fourth noble metal layer overlying the second noble metal layer; and

forming a second passivation film comprising approximately the same material as the passivation film overlying the fourth noble metal layer.

16. (Original) The method as claimed in claim 15, wherein the substrate comprises tungsten carbide.

17. (Original) The method as claimed in claim 1, wherein the first noble metal layer comprises Ni-containing Ir-Re alloy.

18. (Original) The method as claimed in claim 15, wherein the thickness of first noble metal layer comprises about 0.3 to 0.6 μ m.

19. (Original) The method as claimed in claim 15, wherein the second noble metal layer comprises Ir-Re alloy.

20. (Original) The method as claimed in claim 15, wherein the thickness of second noble metal layer is about 0.3 to 0.6 μ m.

21. (Original) The method as claimed in claim 1, wherein the thickness of third intermediate layer is about 0.01 to 0.05 μ m.

22. (Original) The method as claimed in claim 15, wherein the third noble metal layer comprises carbon-containing Ir-Re alloy with C, Ir, and Re atoms therein approximately arranged as superlattice.

23. (Original) The method as claimed in claim 15, wherein the third noble metal layer comprises carburized Ir-Re alloy.

24. (Original) The method as claimed in claim 15, wherein the fourth noble metal layer comprises approximately the same material as the third noble metal layer.

25. (Original) The method as claimed in claim 15, wherein the fourth noble metal layer comprises carbon-containing Ir-Re alloy with C, Ir, and Re atoms therein approximately arranged as superlattice.

26. (Original) The method as claimed in claim 25, further comprising forming the fourth noble metal layer using co-sputtering with multiple targets.

27. (Original) The method as claimed in claim 25, wherein carbon concentration in the fourth noble metal layer is approximately 20% or more.

28. (Original) The method as claimed in claim 15, wherein the fourth noble metal layer comprises carburized Ir-Re alloy.

29. (Original) The method as claimed in claim 28, wherein forming the fourth noble metal layer further comprises:

forming a Ir-Re alloy layer overlying the second noble metal layer; and

implanting carbon ions into a surface of the Ir-Re alloy layer, thereby carburizing the Ir-Re alloy layer.

30. (Original) The method as claimed in claim 28, wherein carbon concentration in the carburized surface of the fourth noble metal layer is approximately 20% or more.

31. (Original) The method as claimed in claim 15, wherein the thickness of second passivation film is about 0.01 to 0.3 μ m.

32. (Original) The method as claimed in claim 1, wherein the second passivation film has a molding surface.